RMA ECOLOGY LTD

Memo

To:	**Tahimana Ltd**	**Job No:**	**2156**
From:	**Emily Roper, RMA Ecology Ltd**	**Date:**	**1 May 2024**
Subject:	**Ecological assessment for Tahimana, Stagecoach Road, Tasman for Fast-track Approvals Bill List Application**		

Dear Sally,

RMA Ecology Ltd has been engaged by Tahimana Ltd to provide an assessment of ecological effects of the proposed subdivision and development project at Tahimana, Stagecoach Road, Tasman, for the purposes of an application to the Fast-track Advisory Group for the project to be listed in the Fast-Track Approvals Bill.

The project site is located on Stagecoach Road, Tasman, legal description Lot 1 DP 450728 and Lot 3 DP 450728, hereafter 'the site' (**Figure 1**). The proposed development scheme plan is illustrated in **Figure 2**.

This memo provides the following:

1. A summary of RMA Ecology Ltd's involvement with the project to date, and professional expertise in the field of ecology;
2. Overview of the ecological values of the site and surrounds;
3. Assessment of ecological effects of the proposed development;
4. Management and mitigation of adverse ecological effects;
5. Assessment of the significant regional benefit of the proposed wetland restoration at the site; and
6. Assessment of how the project may be affected by climate change.

In summary, the proposed development at Tahimana will provide a significant regional benefit to Tasman's wetlands. It will create an overall net benefit for wetland and stream health though the removal of stock and the planting of wetlands and riparian margins. The proposed ecological planting will also increase the area of good quality habitat on the site, for refuge, foraging, and nesting, benefitting a range of terrestrial fauna species, including birds and native skinks, as well as aquatic invertebrates and fish. Overall, the project will have a profound net-gain ecological benefit to the site, and result in ecological protection and enhancement, as well as improving resilience, to local wetlands, the Moutere estuary and as a local resource for indigenous biodiversity.

1 Experience and expertise

RMA Ecology Ltd has been involved in the Tahimana development project since January 2022. Ecologists at the company have been across all of the Tahimana development site over ten visits covering aspects including stream mapping, stream condition assessments, wetland delineation, ecological valuation and classification, vegetation mapping, native bird observations, and fauna habitat surveys. Desk-top work includes extensive GIS values mapping, effects assessment, and assessment of compliance with relevant national and regional policy.

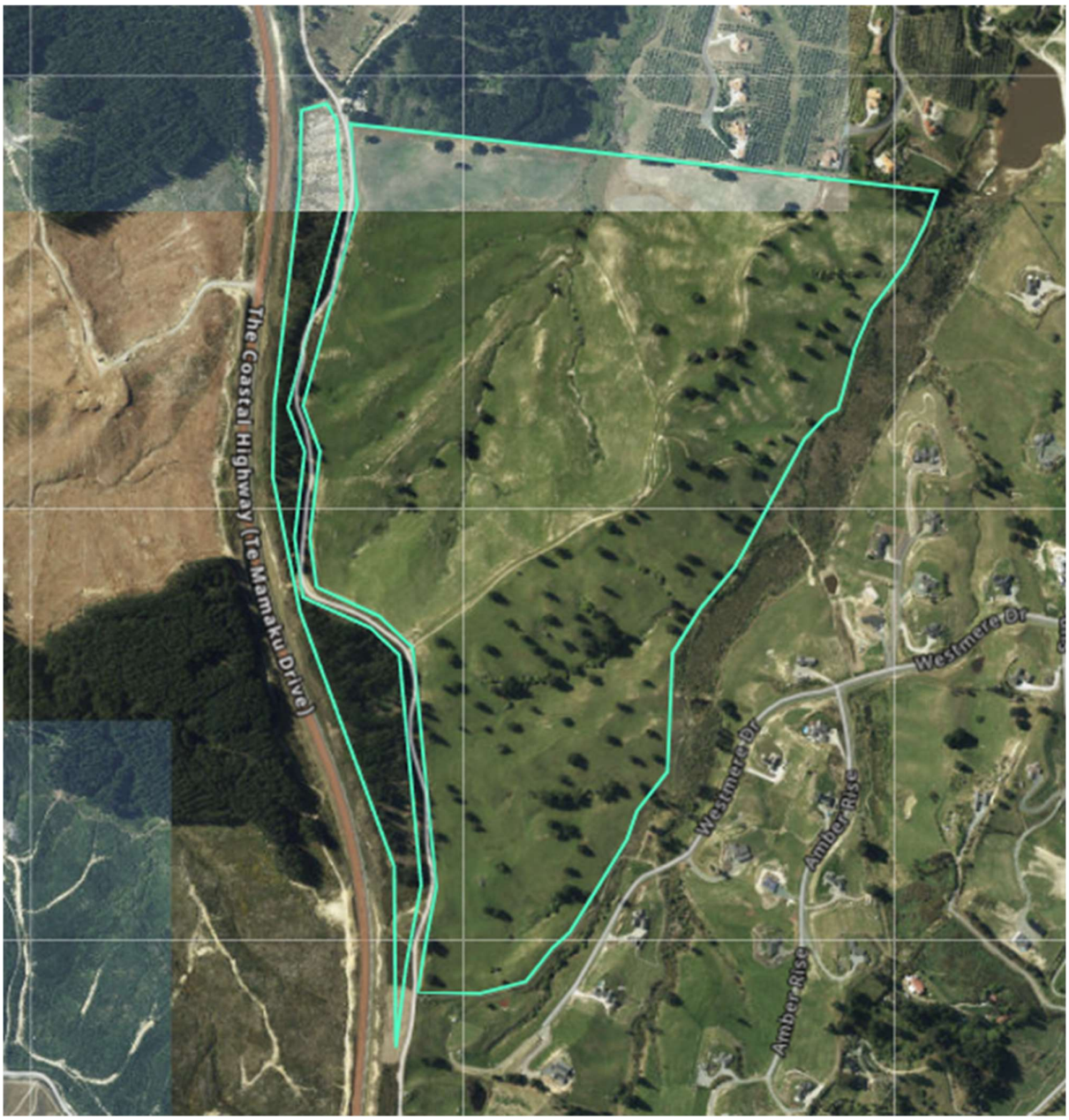

Figure 1. Location of the site on Stagecoach Road, Tasman (turquoise boundary lines). The site comprises two lots, legal description Lot 1 DP 450728 (western lot) and Lot 3 DP 450728 (eastern lot).

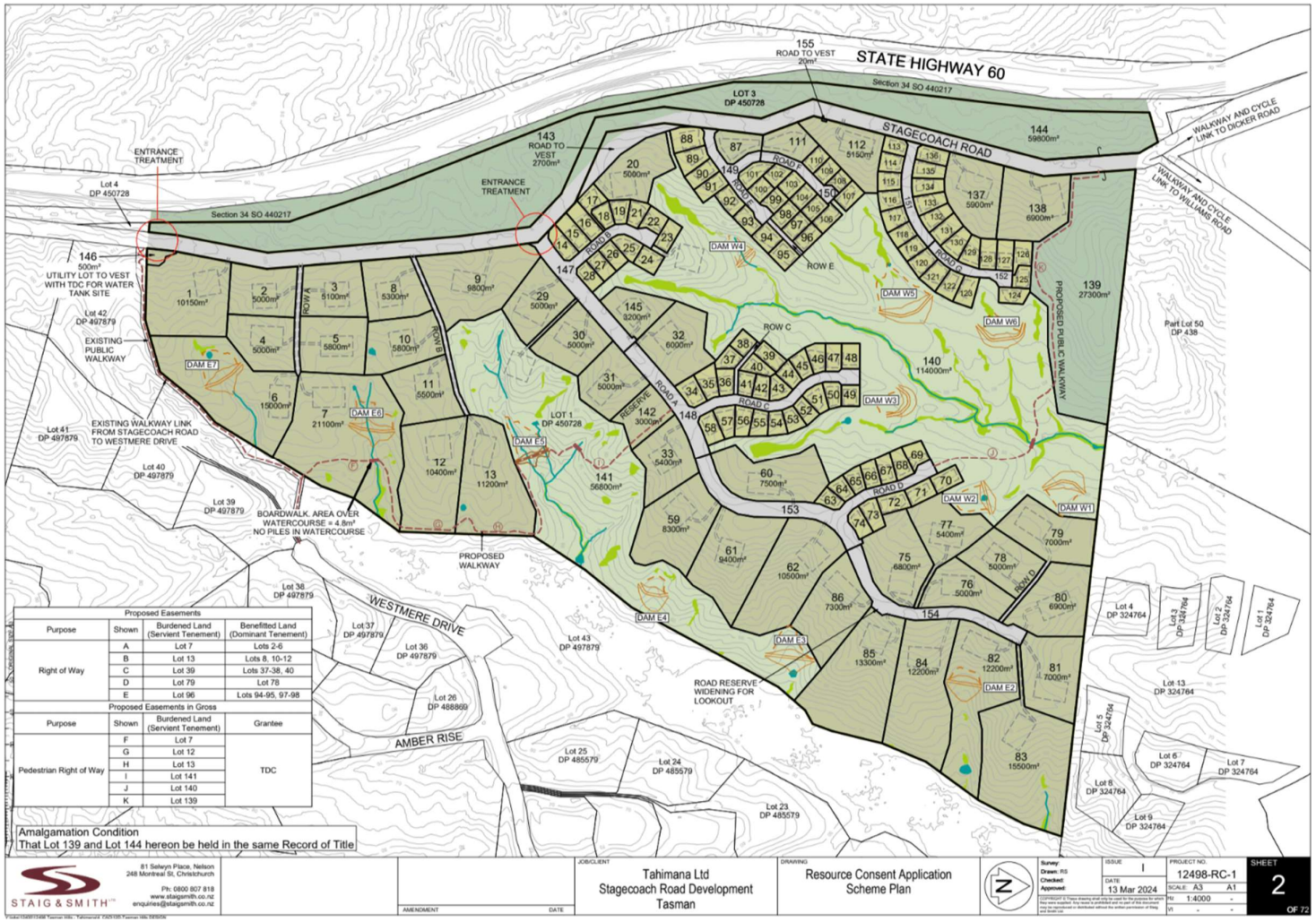

Figure 2 Scheme plan illustrating the proposed subdivision and layout of lifestyle and residential lots, the reserved land to be managed as private open space, the network of streams and wetlands, the location of the proposed walking tracks, and the location of the proposed stormwater detention basins.

Dr Graham Ussher, Principal Ecologist at RMA Ecology Ltd, has been involved at all stages of the project. Graham has 30 years of experience with government agencies and the commercial sector assessing biodiversity and biosecurity issues in New Zealand. Graham has worked extensively with all sectors of land, transport, energy generation, and resource development on projects that involve assessments of ecological effects and the development of approaches to managed residual effects (including offsetting). Graham has published extensively on biodiversity offsetting, ecological compensation, and the application of the mitigation hierarchy in New Zealand in local planning, legal and science journals and in internationally peer-reviewed publications.

The wider RMA Ecology Ltd team includes staff within specialisations in botany, avifauna (birds), herpetology (lizards), and freshwater ecology (stream and wetland assessments); most over several decades of practice. All have been directly involved in this project.

Overall, we have confidence that the site investigations work for ecology has been undertaken to a very high quality.

2 Ecological values of the site

The site is located within a typical Tasman rural environment. The original vegetation, which would have consisted primarily of beech forest across hill slopes and podocarp forest in the river valleys, has been heavily modified or removed for the purposes of farming and forestry. The site is currently used for livestock grazing, and little native vegetation remains. A network of streams and wetlands remain, however, supporting freshwater ecosystems which are of ecological value.

There are 13 watercourses on the site. They are in poor to very poor condition as a result of past and present land uses, including forestry, and the grazing of livestock. Stock continues to have access to all the streams, and trampling of the stream beds and grazing of riparian vegetation is in evidence throughout the site. Despite their degraded condition, the streams are part of a network of watercourse and wetland habitat, and will contribute towards ecosystem services such as stormwater attenuation.

Fifty-one (51) wetlands have been identified on the site. These wetlands meet the criteria of a 'natural inland wetland' as defined in the National Policy Statement for Freshwater Management. All of the wetlands are degraded as a result of decades of previous land uses, including forestry and farming, and the current use of the land for livestock grazing. They are of poor ecological quality, supporting only a low diversity of common wetland plant species, both native and exotic.

Seven native bird species and four exotic species have been observed at the site – all are common rural species that are not listed as 'At Risk' or 'Threatened'.

Native fish were not observed in the streams and wetlands during the site visits, but there are records of fish from the wider catchment[1]. It is possible that the streams and/ or wetlands are used during periods of regular flow by native fish – longfin eel is the most likely species to use this site.

There is a large, ecologically significant wetland on the site's eastern boundary. This wetland is actively managed, and protected by a stock and cat-proof fence. The site's wetlands are ecologically connected to this neighbouring wetland.

[1] NIWA Freshwater Fish Database

3 Assessment of ecological effects

A number of potential adverse ecological effects of the proposed development have been identified, relating to the effects of earthworks, stormwater management, and the changes in hydrology resulting from an increase in impervious surfaces and diversion of stormwater. The potential adverse ecological effects have been analysed following the EIANZ[2] methods to determine the magnitude and overall level of effects. In summary, all potential adverse effects fall within the range of net-gain to moderate impact.

Initiatives are proposed to address the potential adverse effects of the development (see below).

The levels of effect on the ecology values of the site were re-assessed after application of the mitigation measures discussed above. These measures reduce the level of adverse effect to **negligible**, **nil**, or a **net gain**.

There are no residual adverse effects, therefore offsetting or compensation measures are not required.

4 Summary of management and mitigation of adverse ecological effects

Methods to avoid or mitigate adverse effects on wetlands and streams include applying a 10 m setback from wetlands for almost all works, implementing best practice erosion and sediment controls, collecting and discharging stormwater from roofs to gully heads to maintain and recharge wetland hydrology, and planting the 10 m buffer with wetland vegetation to create a net gain for biodiversity.

Effects on native fish will be minimised by salvaging fish from farm ponds, and providing for fish passage.

Planting of riparian margins will also provide a net gain for native birds.

5 Assessment of the significant regional benefit of the proposed wetland restoration at the site

Freshwater wetlands are one of the most depleted ecosystem types in New Zealand, with 90 % having been lost nationwide[3]. While the Tasman region supports nationally and internationally important wetlands including Farewell Spit, Mangarakau Swamp, Waimea Inlet and Te Waikoropupu Springs, which are protected as public land, wetlands on private land have been severely depleted, now covering only about 5 % of their former area[4].

Wetlands are important for many reasons including:

- Provision of habitat for a wide range of aquatic invertebrates, fish, and native birds;
- Filtration of water and sediment, thus improving water quality;
- Water storage and flood mitigation; and

[2] As contained within the EIANZ EciA guidelines. Roper-Lindsay, J., Fuller S.A., Hooson, S., Sanders, M.D., Ussher, G.T. 2018. Ecological impact assessment. EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems. 2nd edition

[3] Denyer, K and Peters, M. 2020. *The root causes of wetland loss in New Zealand: An analysis of public policies and processes*. National Wetland Trust.

[4] https://www.tasman.govt.nz/my-region/environment/environmental-management/land/wetlands/

- Maintaining water flow in streams in dry periods – fish abundance and diversity is almost always better in wetland-fed streams[4].

According to research by Denyer and Peters (2020)[3], the Tasman region supported 3,557 ha of freshwater wetland in 2018. This area is spread over more than 800 wetlands, meaning that the majority of these wetlands are small, being less than 10 ha in area[5]. Freshwater wetlands are still being lost, primarily for the conversion of land to high-producing grassland. Between 1996 and 2018, almost 5,400 ha of freshwater wetland was removed nationwide[3].

This extent, and the previous and continuing rates, of loss of freshwater wetlands illustrates the very great need for the retention and enhancement of freshwater wetlands, particularly on private land. The wetlands at Tahimana cover a total area of 1.25 ha. The wetland on the adjacent property on Westmere Drive covers an area of approximately 5 ha. Combined, these areas of wetland contribute 0.17 % of Tasman's total freshwater wetland resource. At the Ecological District scale, this represents 9.3 % of freshwater wetlands in the northern sector of the Moutere Ecological District[6].

The proposed development at Tahimana will include the protection and restoration of all the wetlands on the site. The wetlands will be protected from stock and planted with native wetland plant species along with a 10 m buffer of native shrubs and trees. This will create a significant area of restored native wetland and buffering native forest. Removing stock will allow the wetlands to recover from trampling and grazing. The restoration planting will create habitat for aquatic invertebrates as well as terrestrial fauna, and will improve the habitat quality in the streams for native fish by providing shade and inputs of woody debris.

The restoration of the wetlands and streams will also have a significant benefit for the wider catchment, including the large wetland on the adjacent property, by improving the filtering capacity of the wetlands. The increase in area of dense native vegetation in and around the wetlands and streams will improve the capacity of the wetlands to filter nutrients and sediment. Stormwater flow rates will also be reduced by the planted vegetation, reducing the rate at which stormwater enters the system, and reducing the potential for flooding and erosion downstream.

By improving the filtration of sediments and nutrients, reducing rates of stormwater flow, and creating shade, the restoration of the site's wetlands and streams will contribute to improved water quality in the wider catchment, including in the Moutere Inlet, which has significant ecological value. The Moutere Inlet is recognised as being nationally significant for shore birds and wading birds including the white heron[7] ('Nationally Critical') and as a valuable nursery area for marine and freshwater fish[8].

[5] https://www.wetlandtrust.org.nz/wp-content/uploads/2019/10/Tasman_Marlborough_TDC_revised-Oct-2019.pdf

[6] North, M. 2015. Ecological District Reports. *Report 2A: Moutere Ecological District – Northern Sector*. Tasman District Council.

[7] Davidson, R J, Starks, J E, Preece, J R, Lawless, P F, and Clarke, I E. 1993. *Internationally and nationally important coastal areas from Kahurangi Point to Waimea Inlet, Nelson, New Zealand: recommendations for protection.* Department of Conservation, Nelson/ Marlborough Conservancy. Occastional Publication No. 14, 121 p.

[8] Schuckard, R and Melville, D S. 2013. *Shorebirds of Farewell Spit, Golden Bay and Tasman Bay*. Prepared for Nelson City Council and Tasman District Council.

6 Assessment of how the project may be affected by climate change

Climate change projections[9] for the Nelson-Tasman region provide an overview of how the climate is likely to change in the future:

- Temperatures are likely to increase by 0.7°C to 1.0°C by 2040, and by up to 3°C by 2090 (compared to temperatures in 1995). There will be an increase in the number of days per year that experience maximum temperatures of over 25°C, and there will be fewer frosts per year.
- Rainfall will vary locally within the region. The largest changes will be for particular seasons rather than annually. Summer, autumn, and winter rainfall is projected to increase by approximately 10 % by 2090, with little change in spring rainfall.
- Extreme rainy days are likely to become more frequent throughout the region.
- The frequency of extremely windy days is not likely to change significantly, but there may be an increase in westerly wind flow during winter, and north-easterly wind flow during summer.
- Some increase in storm intensity, local wind extremes, and thunderstorms is likely to occur.
- Sea levels will continue to rise. New Zealand tide records show an average rise in relative mean sea level of 1.7 mm per year over the 20th century. Globally, the rate of rise has increased and further rise is expected in the future.

The proposed development is likely, therefore, to be affected by increases in temperature, and increases in rainfall in some seasons, with increased frequency of extreme rain events. Rising temperatures will result in increased evapotranspiration with the potential for increased rates of drying of streams and wetlands. On the other hand, increased rainfall in some seasons, and increased storm intensity, will have the potential to cause erosion, sedimentation, and flooding of the streams and wetlands, and downstream in the wider catchment. Rising sea levels will result in a reduced ability for the catchment to drain into the Moutere Inlet, and the potential for increased flooding upstream, particularly during high tides.

The stormwater water management system, including the detention basins and diversion of clean water to gully head wetlands, along with the extensive planting of the stream and wetland network, will play a significant part in ensuring the effects of climate change are ameliorated:

- The stormwater detention basins are designed to detain water for a 1 % AEP rainfall event so that erosion and sedimentation do not occur downstream.
- Clean water from building roofs will be diverted directly into gully head wetlands so as to recharge surface and ground water inputs to these wetlands. This reduces the rate at which the total volume of stormwater enters the stormwater detention basins, and ensures wetlands above the detention basins continue to receive sufficient inputs of water.
- The extensive planting of the stream and wetland network, including 10 m buffers of native shrub and tree planting, will help protect the streams and wetlands from erosion in extreme storm events, increase the filtering capacity of streams and wetlands, and reduce the volume and rate at which water, nutrients, and sediment enter the catchment downstream.

[9] Ministry for the Environment https://environment.govt.nz/facts-and-science/climate-change/impacts-of-climate-change-per-region/projections-nelson-tasman-region/#temperature

- The planting will shade the streams and wetlands, thus keeping water temperatures low, even as mean average air temperatures rise. Low water temperatures are important for the health of fish and aquatic invertebrates, and for preventing excess growth of algae.
- Protection of the stream and wetland network by excluding stock from the streams, wetlands, and surrounding area, will have significant benefits for the health of the wetland system on site, as well as downstream in the wider catchment, by reducing the level of nutrients (from excreta) and sediment (from trampling) entering the catchment.

Yours sincerely,

Emily Roper

Senior Ecologist[10]

RMA Ecology Ltd

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